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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/878,789

06/10/2001

Brian G. Agee

1456

7590

10/12/2005

George S. Cole, Esq.
495 Seaport Court, Suite 101
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EXAMINER

WONG, BLANCHE

ART UNIT

PAPER NUMBER

2667

DATE MAILED: 10/12/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/878,789

Applicant(s)

AGEE ET AL.

Examiner

Blanche Wong

Art Unit

2667

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _____ MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 June 2001.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) See Continuation Sheet is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) See Continuation Sheet is/are rejected.
- 7) ☒ Claim(s) See Continuation Sheet is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10 June 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Continuation of Disposition of Claims: Claims pending in the application are 1-184 (renumbered 1-183 in set of claims received October 8, 2002).

Continuation of Disposition of Claims: Claims rejected are 1-7, 12, 13, 16, 18-31, 33, 36, 38-41, 44-50, 55-57, 59, 61, 62, 64-67, 69, 71-75, 78, 82, 84, 91, 101, 103-105, 107, 108, 110, 112, 113, 137-139 and 141-143.

Continuation of Disposition of Claims: Claims objected to are 8-11, 14, 15, 17, 32, 34, 35, 37, 42, 43, 51-54, 58, 60, 63, 68, 70, 76, 77, 79-81, 83, 85-90, 92-100, 102, 106, 109, 111, 114-136, 140 and 144-183.

DETAILED ACTION

1. On December 29, 2004, a Quayle Office Action was mailed to the Applicant with suggestions to make minor changes to claim 1 to improve its clarity. On February 18, 2005, a communication was sent in to the Office via Facsimile, authorizing the examiner to make changes via Examiner's amendment and stipulated the specific changes to be made to claims 1 and 2. The above communication was routed to the Office's Technical Support staff and was mistakenly entered into the file record as an amendment in response to the above Quayle action. On April 25, 2005, a Notice of Non-Compliant Amendment was mailed to the Applicant, stating that the above communication submitted on February 18, 2005 does not have a complete list of all claims and giving the Applicant one (1) month to respond.

Since the above communication was not an actual amendment but rather an authorization to the examiner for making an examiner's amendment, the above Notice of Non-Compliant Amendment was sent in error. Furthermore, the above-mentioned Quayle action does not present any adversary issues with the application but rather provides minor suggestions, the Quayle action was also sent in error.

In view of the above, both of the Quayle action and the Notice of Non-Compliant Amendment are hereby vacated. A new Office Action follows below.

2. Latest set of claims, as filed on **October 8, 2002**, are being examined. Examiner notes that this set of claims are renumbered from cl. 56 onward due to duplication of cl. 56, although the dependency of claims has not changed. The last claim is renumbered from cl. 182 to cl. 183. Examiner notes that dependences of claims are not changed accordingly.

Specification

3. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which Applicant may become aware in the specification.

Claim Objections

4. Claims 1,2,95,129,133,137 are objected to because of the following informalities:
- With regard to cl. 1, ln. 31-32 and 35-36, Examiner suggests replacing – diversity capability – with “diversity capability means” in consistent with “diversity capability means” in cl. 1, ln. 27-28.
 - With regard to cl. 2, ln. 32-33 and 36-37, Examiner suggests replacing – diversity capability – with “diversity capability means” in consistent with “diversity capability means” in cl. 1, ln. 28-29.
 - With regard to cl. 95, ln. 9, Examiner suggests replacing – concerning – with “concerning”.
 - With regard to cl. 129 and 133, ln. 2, Examiner suggests removing the extra period at the end of the claims.
 - With regard to cl. 137, ln. 2, Examiner suggests adding a period at the end of the claim.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. **Claims 1-7,12,13,16,18-31,33,36,38-41,44-50,55-57,59,61,62,64-67,69,71-75,78,82,84,91,101,103-105,107,108,110,112,113,137-139,141-143** are rejected under

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35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

- With regard to cl. 1, ln. 31-32 and ln. 35-36, it is unclear whether – diversity capability – is the same as – diversity capability means – in ln. 27-28.
- With regard to cl. 2, ln. 32-33 and ln. 36-37, it is unclear whether – diversity capability – is the same as – diversity capability means – in ln. 28-29.
- With regard to cl. 19, ln. 3, it is unclear what is – diversity capability – and whether it is the same as – diversity capability means of cl. 1, ln. 15.
- With regard to cl. 20, ln. 3, it is unclear what is – diversity capability – and whether it is the same as – diversity capability means of cl. 1, ln. 15.
- With regard to cl. 41, it is unclear whether – diversity capability – is the same as – diversity capability means – on p. 23.
- With regard to cl. 55, it is undefined what is “EQ. 40” and “EQ. 41” in ln. 8 and ln. 10 respectively.
- With regard to cl. 56, it is undefined what is “EQ. 46 and EQ. 47” on p. 32.
- With regard to cl. 57, it is undefined what is “Figure 37” in ln. 2.
- With regard to cl. 61, it is undefined what is “p1(q)” on p. 34.
- With regard to cl. 62, it is undefined what is “EQ.5 and EQ.6” in ln. 3.
- With regard to cl. 64, it is undefined what is “EQ.4 “ in ln. 2.
- With regard to cl. 67, it is undefined what is “EQ. 8” in ln. 5 and “EQ.6” in ln. 6.

- With regard to cl. 69, it is undefined what is “EQ.10” in ln. 3.
- With regard to cl. 71, it is undefined what is “EQ. 3” in ln. 2.
- With regard to cl. 72, it is undefined what is “EQ. 13 and 14” and “EQ. 11” in ln. 2.
- With regard cl. 73, it is undefined what is “EQ.20,EQ.21,EQ.22” in ln. 3, “EQ.23 and EQ.24” in ln. 4, “EQ.25 and EQ.26” on ln.7.
- With regard cl. 74, it is undefined what is “EQ.25 and EQ.26” in ln. 2, “EQ.23 and EQ.24” in ln. 6, and “EQ.25 and EQ.26” in ln. 7.
- With regard to cl. 75, it is undefined what is “EQ.28, EQ.29, and EQ. 30” in ln. 3.
- With regard to cl. 78, it is undefined what is “EQ.31” in ln. 3, “EQ.32” in ln. 4, and “EQ.33” in ln. 5.
- With regard to cl. 82, it is undefined what is “Figure 32A and 32B” in ln. 2.
- With regard to cl. 84, it is undefined what is “EQ. 3” in ln. 1.
- With regard to cl. 91, it is undefined what is “EQ.34” in ln. 1 and “EQ.35” in ln. 2.
- With regard to cl. 107, it is unclear what is “similarly modified.”
- With regard to cl. 108, on p. 45, ln. 8 and 13, it is unclear whether – diversity capability – is the same as – diversity capability means – on p.44; it is undefined what are “D21” and “EQ.49” on p.46, ln. 4 and 5.
- With regard to cl. 112, it is undefined what is beta in – altering [beta] – on p. 47.
- With regard to cl. 137-9,141-143, it is dependent on a later claim 166.

7. There is insufficient antecedent basis for this limitation in the claim.

- Claim 1 recites the limitations "said analog radio waves" in ln. 16, and "the diversity channels" in ln. 53.
- Claim 2 recites the limitations "said analog radio waves" in ln 17, and "the diversity channels" in ln. 54.
- Claims 3-7,12,18,56,61,62 recite the limitation "the diversity channel" in ln. 1.
- Claim 12 recites the limitation $g_1(q)$ in ln. 8 and in the equation.
- Claim 13 recites the limitation "every diversity channel" in ln. 3.
- Claim 16 recites the limitation $g_1(q)$ in ln. 9 and in the equation.
- Claim 18 recites the limitation "diversity channel means" in ln. 6.
- Claims 21,22,26-31,33,36,38-40,44-50,59 recite the limitation "the diversity channel" in ln. 1-2.
- Claims 23-25 recite the limitations "said analog radio waves" in ln. 2-3.
- Claims 28 and 39 also recites the limitation "the diversity channel" in ln. 3.
- Claim 30 also recites the limitation "the diversity channel" in ln. 4.
- Claim 40 also recites the limitation "diversity channel capacity" in ln. 5.
- Claim 41 recites the limitation $g_1(q)$ and in the equation on p. 24, and "the diversity channels" on p. 25.
- Claims 65 and 66 recite the limitation "the network B" in ln. 1-2.
- Claim 67 recites the limitation "the reciprocity equation" in ln. 6.
- Claim 75 recites the limitation "the step of matrix channel estimation" in ln. 4.

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- Claim 101 recites the limitation “the diversity channels” on p. 42.
- Claims 103 and 104 recite the limitation “said first subset” in ln. 1 and ln. 2 respectively.
- Claim 105 recites the limitation “the diversity channels” in ln. 1-2.
- Claim 108 recites the limitation “said analog radio waves” on p. 44, and “the diversity channels” on p. 46, ln. 9.
- Claim 110 recites the limitation “optimizing for channel capacity” on p.46.
- Claim 113 recites the limitation $g_1(q)$ and in the equation on p. 49, and “the diversity channels” on p. 50.

Allowable Subject Matter

8. Claims 8-11,14,15,17,32,34,35,37,42,43,51-54,58,60,63,68,70,76,77,79-81,83,85-90,92-100,102,106,109,111,114-136,140 and 144-183 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Blanche Wong whose telephone number is 571-272-3177. The examiner can normally be reached on Monday through Friday, 830am to 530pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chi H. Pham can be reached on 571-272-3179. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

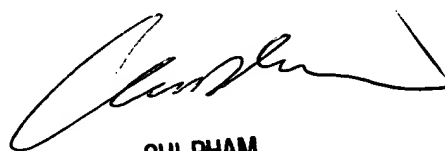
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RW

BW

September 27, 2005



CHI PHAM
SUPERVISORY PATENT EXAMINE
TECHNOLOGY CENTER 2667

10/11/05